CHRISTIAN COUNTY

(Christian County Water Service Area Map)

- Estimated 1999 population of 66,700--86% on public water
- Estimated 2020 population of 77,500--89% on public water
- 540 miles of water lines, with plans for 320 additional miles
- Estimated funding needs for public water 2000-2005--$18,129,000
- Estimated funding needs for public water 2006-2020--$8,400,000

Christian County had an estimated population of 66,747 (25,098 households) in 1999 with a projected population of 77,456 (29,756 households) in 2020. Public water is provided to over 19,600 customers or about 7 out of 8 of the county's residents. In areas of the county not served by public water, about 3 of 4 households rely on private domestic wells and 1 of 4 households rely on other sources. An estimated 1,040 customers will be added to public water service through new line extensions in 2000-2020.

While difficult to project, Hopkinsville and Christian County are expected to have a significant growth due to the City's success in attracting industry. Over 1,200 new jobs are expected with new plant announcements. While not all of these jobs will be filled locally, many will. With the steady growth of Ft. Campbell and new spin-off commercial enterprises, it is expected that Christian County water usage will exceed the 20% projections in the water supply plan.

Estimated Costs - Proposed Projects, 2000-2005

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in $1000	In $1000	in $1000	in $1000	in $1000	in $1000
CHRISTIAN								-
Pembroke	9	10	276	1,200				1,476
Oak Grove	2		85	36				121
Hopkinsville	11		346			12,630	540	13,516
Crofton				60		50	44	154
Christian Co. W/D	65	270	2,862					2,862
TOTAL	**87**	**280**	**3,569**	**1,296**		**12,680**	**584**	**18,129**

Estimated Costs - Proposed Projects, 2006-2020

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in $1000	in $1000	in $1000	in $1000	in $1000	in $1000
CHRISTIAN								-
Christian County W/D	230	Est. 760	6,900				1,500	8,400
Total	**230**	**760**	**6,900**				**1,500**	**8,400**

WATER SERVICE AREAS
CHRISTIAN COUNTY
Kentucky

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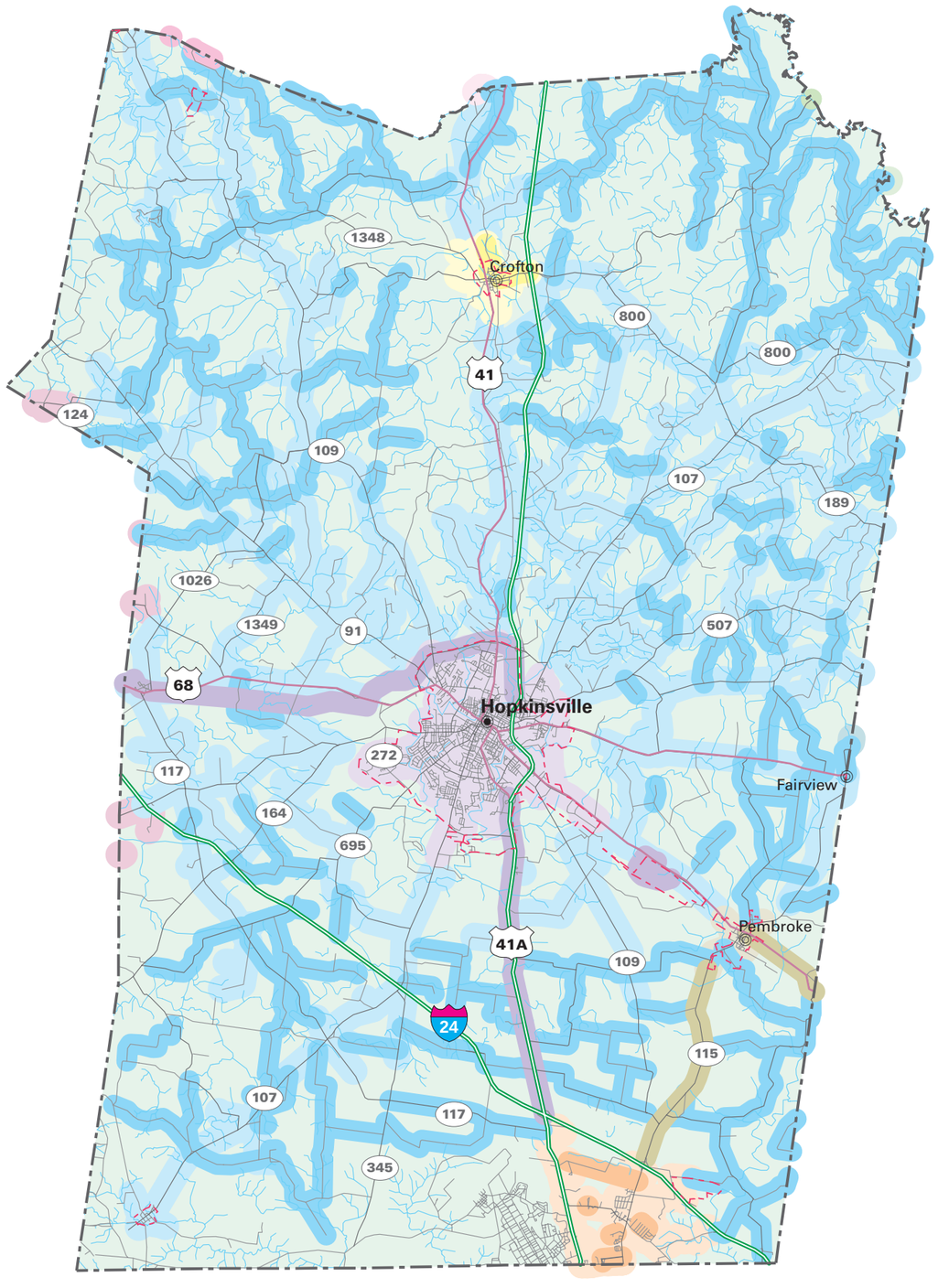

WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		TODD COUNTY WATER DISTRICT
		SOUTH HOPKINS WATER DISTRICT
		PEMBROKE WATER WORKS
		OAK GROVE WATER DEPARTMENT
		MUHLENBERG COUNTY WATER DISTRICT
		HOPKINSVILLE WATER ENVIRONMENTAL AUTHORITY
		CROFTON WATER DEPARTMENT
		CHRISTIAN COUNTY WATER DISTRICT
		BARKLEY LAKE WATER DISTRICT

PUBLIC WATER SYSTEMS

The residents of Christian County are presently provided water by five community systems--4 municipal and 1 water district. The community systems are the City of Pembroke with 370 customers, the City of Oak Grove with 2,337 customers, the Hopkinsville Water Environment Authority, which serves 13,200 customers, the City of Crofton with 681 customers; and the Christian County Water District with 3,265 customers.

PEMBROKE WATER WORKS

PWSID:	0240347
System Type:	COMMUNITY
Owner Type:	MUNICIPAL
Surface Source:	
Purchase Source:	
Well Source:	Yes
Sells Water to:	
Treatment Plant Capacity (MGD):	0.11
Percent Daily Average Production:	97.00
Total Tank Storage Capacity (gallons):	75,000.00
Total Service Connections:	275.00
Number of Employees:	0.00
Treatment Operator Class:	
Distribution Operator Class:	2BD
Customer Rate for 1,000 Gallons:	Not available
O/M costs 1997:	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):	Not available
Water Sold 1997 (gallons):	Not available
Unaccounted-for Water 1997 (%):	Not available

The City of Pembroke utilizes two wells as its source of water and has a treatment plant with a capacity of 110,000 gallons per day. Utilization averages 107,000 gallons, which is near 100%. The Hopkinsville Water Environment Authority provides additional water to meet the peak days. Storage consists of one 75,000 gallon elevated storage tank.

Like many older distribution systems, Pembroke's is in a bad state of repair. Water loss and non-revenue usage many times exceeds 50%, which is equal to or greater than total residential usage. Also, line sizes are inadequate to provide necessary flows in many areas of the City. Reducing the water losses would reduce the pressure on this City's treatment plant; however, to purchase all treated water from HWEA without eliminating the water losses

would result in a serious financial situation for the City's water and sewer department. Pembroke has 345 residential customers.

OAK GROVE WATER DEPARTMENT

PWSID:	0240329
System Type:	COMMUNITY
Owner Type:	MUNICIPAL
Surface Source:	HUNTER SPRING
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):	0.52
Percent Daily Average Production:	74.00
Total Tank Storage Capacity (gallons):	1,250,000.00
Total Service Connections:	2,331.00
Number of Employees:	7.00
Treatment Operator Class:	2D
Distribution Operator Class:	3A
Customer Rate for 1,000 Gallons:	Not available
O/M costs 1997:	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):	Not available
Water Sold 1997 (gallons):	Not available
Unaccounted-for Water 1997 (%):	Not available

The City of Oak Grove utilizes Hunter's Spring as its current source of water and has a short-term contract with Ft. Campbell for treated water to supplement their needs. The City's treatment plant has a capacity of 518,000 gallons per day. Utilization has exceeded capacity on many occasions. Without the contract with Ft. Campbell, the city would have been in serious problems. The distribution system also has problems with volumes and pressure. Storage consists of one 250,000-gallon and two 500,000-gallon storage tanks plus 87,500-gallons clear well at its treatment facility. Currently, Oak Grove serves 2,224 households in the City, and the City is recognized as the fastest growing community in Kentucky, with new subdivisions and commercial enterprises constantly planned and under construction.

The Water Supply Plan recognizes the needs of Oak Grove for water. Projections in the plan for the year 2010 indicate demand will nearly double for water, making finding a solution to their problem even more critical. The City is looking at various options for solving their problems, including the construction of a new 1.5 million gallons per day treatment plant, purchasing water from the Hopkinsville Water Environment Authority, the City of

Clarksville, Tennessee, and the Lake Barkley Water District through the Christian County Water District.

HOPKINSVILLE WATER ENVIRONMENTAL AUTHORITY

PWSID:	0240201
System Type:	COMMUNITY
Owner Type:	WATER DISTRICT
Surface Source:	STONE QUARRY #1
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):	10.00
Percent Daily Average Production:	62.00
Total Tank Storage Capacity (gallons):	6,750,000.00
Total Service Connections:	13,213.00
Number of Employees:	62.00
Treatment Operator Class:	3D
Distribution Operator Class:	4A
Customer Rate for 1,000 Gallons:	Not available
O/M costs 1997:	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):	Not available
Water Sold 1997 (gallons):	Not available
Unaccounted-for Water 1997 (%):	Not available

The Hopkinsville Water Environment Authority (HWEA) utilizes several sources of raw water. They include the North Quarry #1, South Quarry #2 and the North Fork of Little River. Also, as a secondary or contingency source, the Authority has four watershed lakes: Lake Blythe, Lake Morris, Lake Tandy and Lake Boxley. HWEA's treatment plant, which is relatively new, has a capacity of 10,000,000 gallons per day, with a utilization average of 6.2 million gallons per day and a peak rate of 7.2 million gallons per day. The water system has storage capacity of 6,750,000 gallons, which includes the clear well at the plant, three elevated tanks and one ground storage tank. The distribution system is in fairly good condition with water loss / non-revenue production of approximately 10%. Of the total 13,200 customers served by the system, 10,198 are residential, most of whom live within the corporate limits of the City. Also, HWEA sells water to the Christian County Water District, the City of Pembroke and is considering furnishing water to the City of Oak Grove.

HWEA obviously has a problem with supply. According to the Christian County Water Supply Plan and information provided by its' staff, HWEA's supply during drought periods

has dropped below 90 days and at one point in 1998, it dropped to a 52-day supply. The Authority is proposing to run a 36-inch raw water line to Lake Barkley which, when completed, will provide the water necessary to meet HWEA's needs through 2050. To meet current as well as the future needs of the systems territory, projects have been selected and ranked by system representatives, elected officials and the Pennyrile Area Development District's Board of Directors as being crucial to the future growth and development of the region.

CROFTON WATER DEPARTMENT

PWSID:	0240090
System Type:	COMMUNITY
Owner Type:	MUNICIPAL
Surface Source:	LAKE MANIRE
Purchase Source:	
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):	0.25
Percent Daily Average Production:	58.00
Total Tank Storage Capacity (gallons):	100,000.00
Total Service Connections:	613.00
Number of Employees:	3.00
Treatment Operator Class:	2D
Distribution Operator Class:	2A
Customer Rate for 1,000 Gallons:	Not available
O/M costs 1997:	Not available
O/M costs per Service Connection:	Not available
Net Revenue 1997:	Not available
Total Water Produced 1997 (gallons):	Not available
Water Sold 1997 (gallons):	Not available
Unaccounted-for Water 1997 (%):	Not available

The City of Crofton's source of water is the Crofton Reservoir with Lake Manire as a back-up source. The treatment plant has a capacity of 250,000 gallons per day, with utilization of approximately 165,000 gallons (66% of the plant's total capacity). The water source is Crofton Lake. Storage consists of a clear well with a capacity of 50,000 gallons and a 100,000-gallon elevated tank. The distribution system has problems with water losses and non-revenue usage, which exceeds 21%. Also, because of small lines, volumes in some areas of the City are not what they should be. Crofton currently serves 650 households

CHRISTIAN COUNTY WATER DISTRICT

PWSID: 0240521
System Type: ..... COMMUNITY
Owner Type: ..... WATER DISTRICT
Surface Source:
Purchase Source:
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD): 0.00
Percent Daily Average Production: 0.00
Total Tank Storage Capacity (gallons): 1,050,000.00
Total Service Connections: 3,189.00
Number of Employees: 7.00
Treatment Operator Class: 2D
Distribution Operator Class:
Customer Rate for 1,000 Gallons: 5.68
O/M costs 1997: 762,776.00
O/M costs per Service Connection: 236.74
Net Revenue 1997: 47,217.00
Total Water Produced 1997 (gallons): 0.00
Water Sold 1997 (gallons): 210,666,000.00
Unaccounted-for Water 1997 (%): 18.27

The Christian County Water District purchases water from the Hopkinsville Water Environmental Authority. Previously the District had purchased water from Lake Barkley Water District and the City of Crofton, but now they depend entirely on the Hopkinsville Water Environment Authority. The District continues to expand service into areas of the County that were not served previously. While currently serving 3,100 customers, projects are underway which increases the number served. Storage includes nine water tanks with a total capacity of 1,050,000 gallons of treated water.

The Christian County Water Supply Plan does project a growth in water usage of the District. To meet current as well as the future needs of the county, projects have been selected and ranked by Christian County system representatives, elected officials and the Pennyrile Area Development District's Board of Directors as being crucial to the future growth and development of the region.

PRIVATE DOMESTIC SYSTEMS

About 9,300 people in Christian County rely on private domestic water supplies: 7,000 on wells and 2,300 on other sources.

In the southern half of Christian County more than three-quarters of the drilled wells in the uplands are adequate for a domestic supply. Yields as high as 50 gpm have been reported from wells penetrating large solution channels. In the low-lying areas of the West Fork of the Red River and the Little River and its major tributaries, most wells are inadequate for domestic use unless the well intercepts a major solution opening in the limestone in which the yield could be very large.

Ground water in the northern half of the county is not as prevalent as in the southern half of the county except in the area west of US 41 between Hopkinsville and Crofton. Most drilled wells in the western central section of the county that obtain water from fault zones are adequate for a domestic supply and sometimes yield up to 100 gpm. Most wells in the rest of the northern half of the county are inadequate for a domestic supply. Some wells in sandstone formations yield enough water for a domestic supply.

Springs with flows ranging from a few gallons per minute to 3,000 gpm are found in the county. Minimum flow generally occurs in early fall, maximum flows in late winter.